

ABSTRACT

A method of detecting and quantitating a microorganism having a specific function and its gene from natural environment which involves: 1) the step of estimating the priority of the microorganism having a specific function in the natural environment; 2) the step of amplifying specific gene domains of the microorganism having a specific function in a liquid culture medium of the highest dilution ratio at which the proliferation of the microorganism is judged as positive, followed by cloning; 3) examining the difference among the gene domains thus cloned and determining the base sequences thereof; and 4) identifying the microorganism having a specific function inhabiting in the natural environment from the base sequence data thus determined. 16SrDNAs having a base sequence represented by any of SEQ ID NOS: 1 to 4. RNA or DNA probes of 10 to 50 bp in size which have a part of a base sequence represented by any of SEQ ID NOS: 1 to 4 and are hybridizable specifically with a petroleum-digesting bacterium belonging to the genus *Cycloclasticus*.